

Environmental Site Design Implementation in Montgomery County, Maryland: Image Library



Prepared for: Montgomery County Planning Department Maryland-National Capital Park and Planning Commission

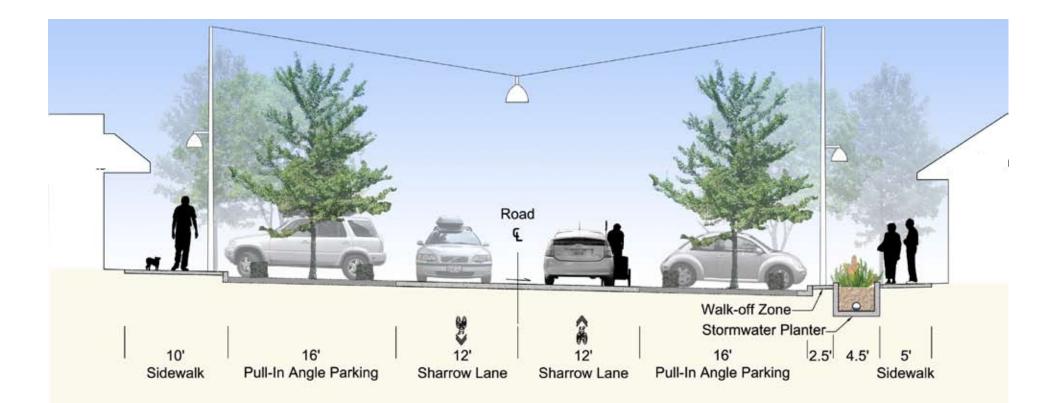


Prepared by: Peg Staeheli ASLA, LEED[®] AP Amalia Leighton PE www.svrdesign.com





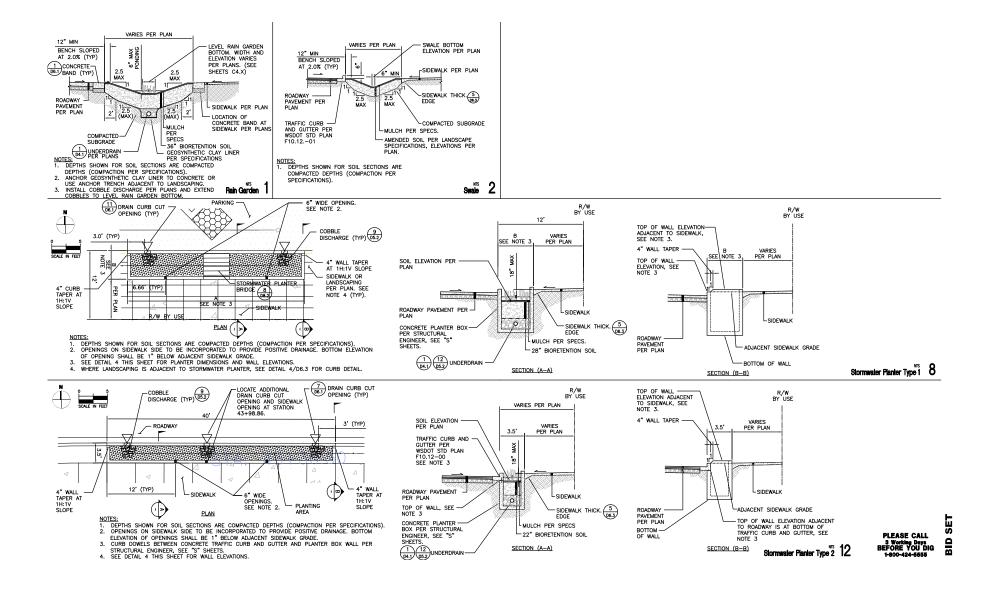
Plan of urban "main street" with environmental site design components.





The street uses a stormwater planter, curb bulbs for trees and porous pavements while accommodating a flexible streetscape that can be used for everyday activities and special events like parades.

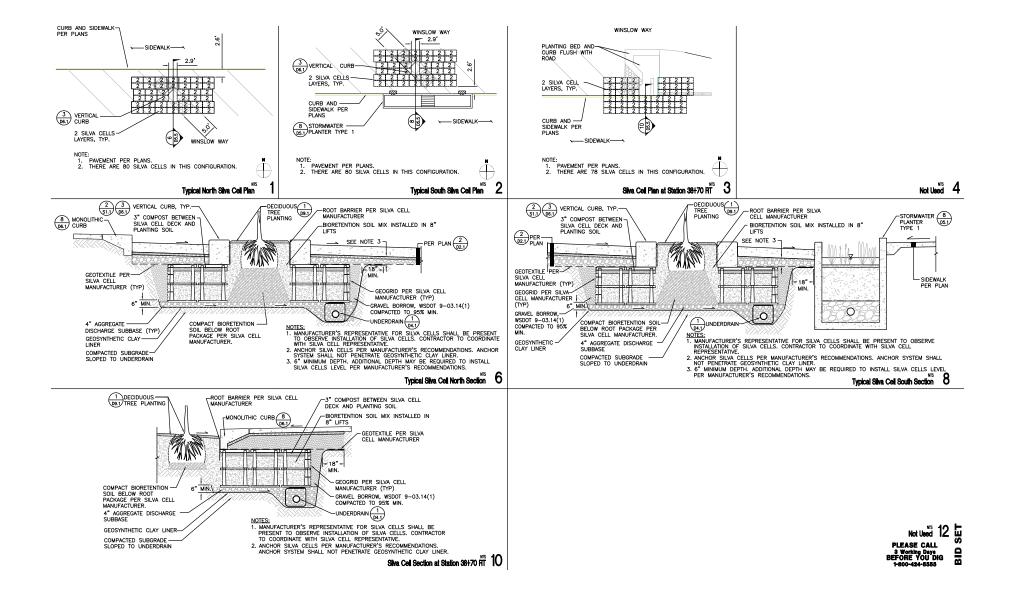
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Stormwater planter details.

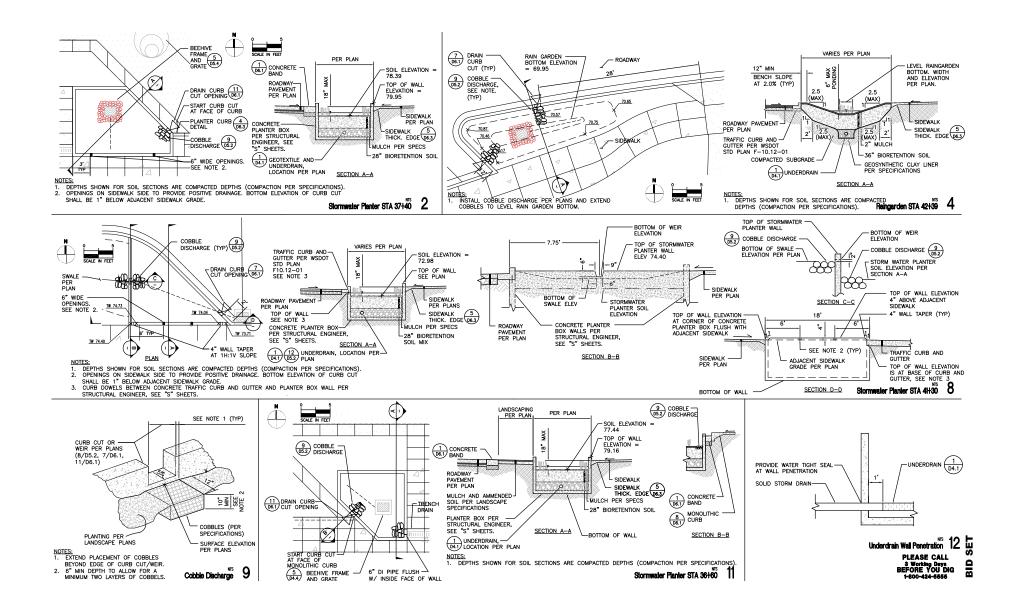






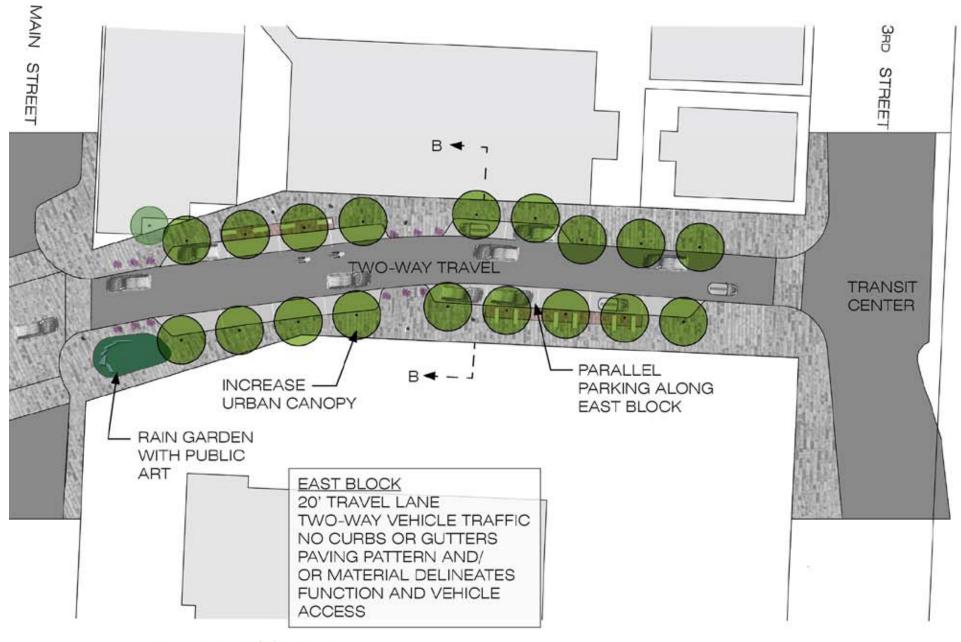
Stormwater planter details including tree plantings.







ESD details focusing on raingardens and strormwater planters.





URBAN WOONERF

This project, in the heart of a suburban business core, combines environmental site design features with the Dutch design philosophy of a "shared space" woonerf.

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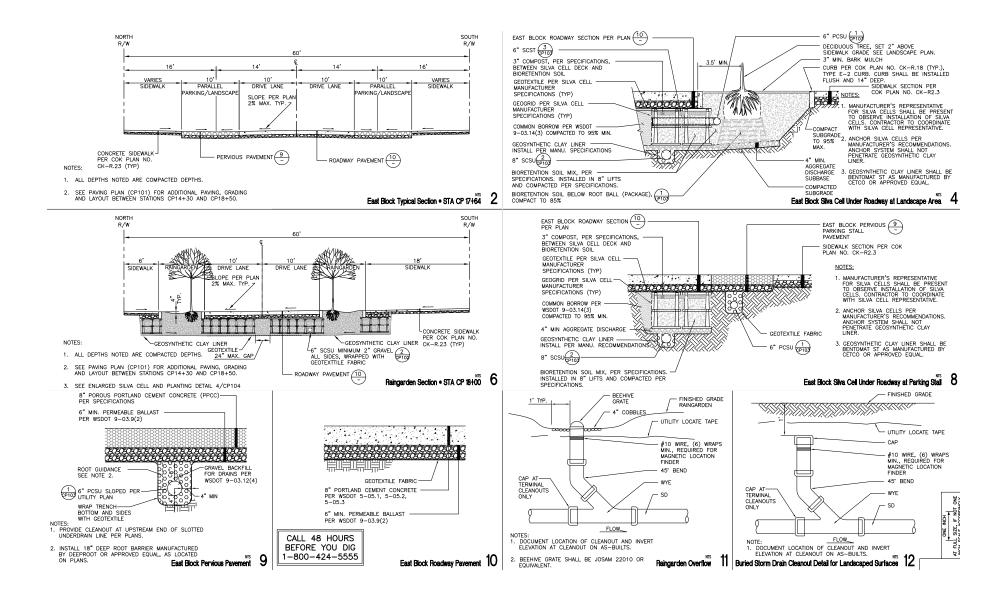
SECTION A-A: WEST BLOCK (NOT TO SCALE)





URBAN WOONERF

The curbless green street cross section.





URBAN WOONERF

Woonerf ESD details showing ESD elements including porous pavements and stormwater planters.





Urban ESD retrofits can help improve mobility, in this case coupling the stormwater planter with pedestrian and bicycle improvements. These stormwater planters overflow back into the existing piped system. The curb bulb reduces pedestrian crossings, provides clear parking limits and edges the bike box.

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With the "Beckoning Cistern" gathering rain from the adjacent building, the street right-of-way was retrofit to slow and reveal stormwater flows. These projects integrated art into stormwater management.

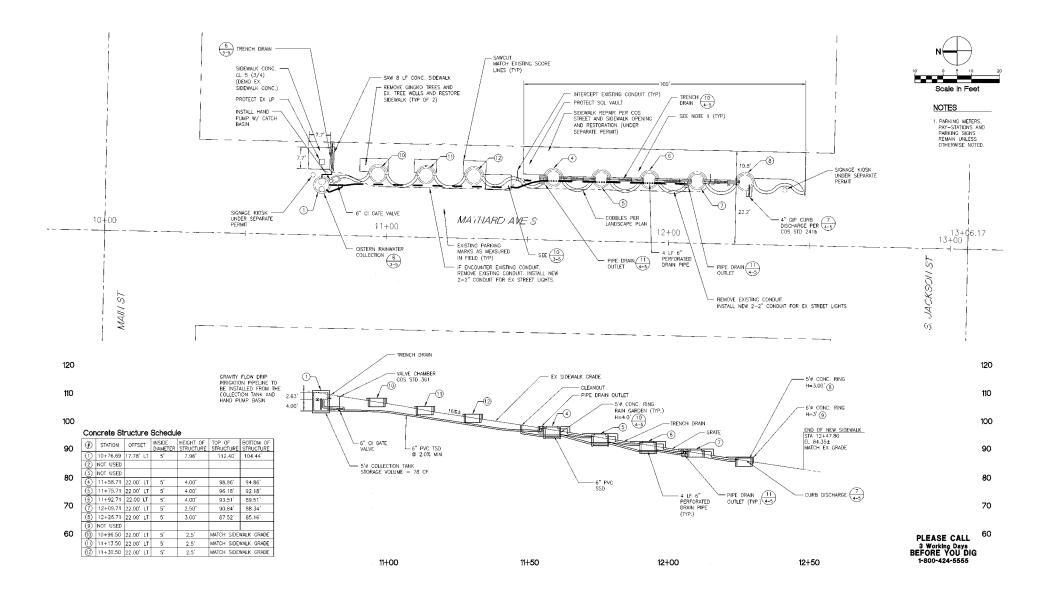
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In a steeply-sloping downtown core, rainwater is harvested from rooftops and then run through a seriese of planted cells. These cells retain water before entering the combined system.

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The plan and section for the street reveal the ESD strategies' vertical and horizontal detailing.





This downtown streetscape has been retrofit to include ESD features.







At intersections, new curb bubls were added that also include bioretention areas which help slow traffic, and define the parking zone. Existing trees were carefully integrated into the plan.

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Closer inspection of the bioretention cells at the intersection curb bubs.



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A new residential street uses pervious concrete and a biorention area/rain garden as part of it's ESD strategy. The pervious concrete road drains to the bioretention swale during larger storm events (25 to 100 year storms).

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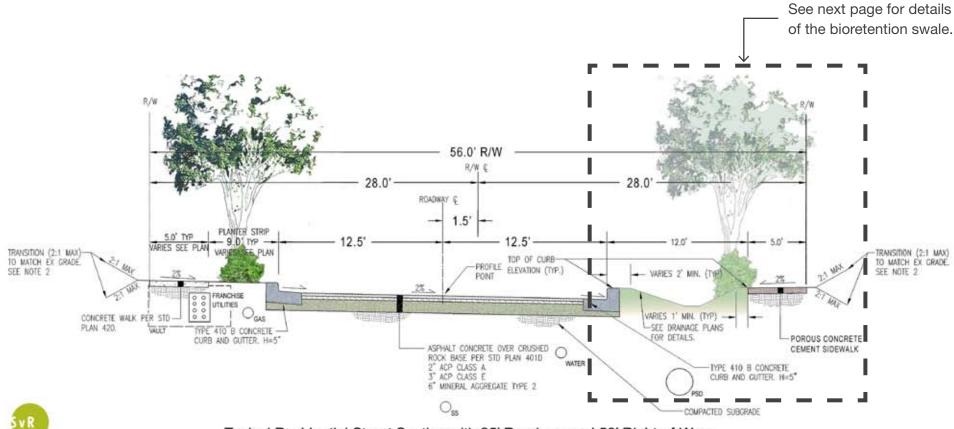




A residential roadway with grass-lined swales on one side of the street. The adjacent sidewalk is constructed with pervious concrete.

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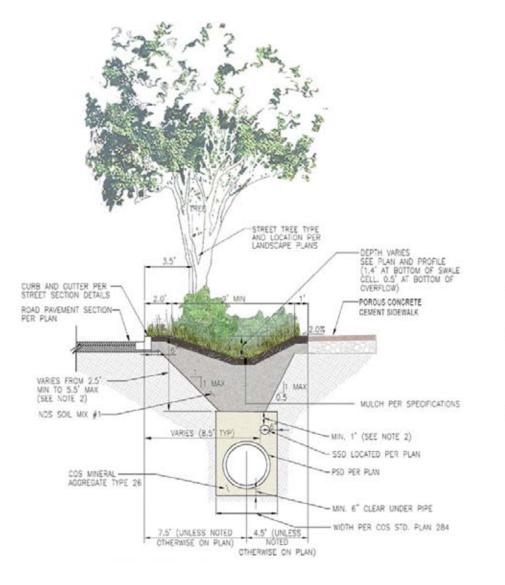


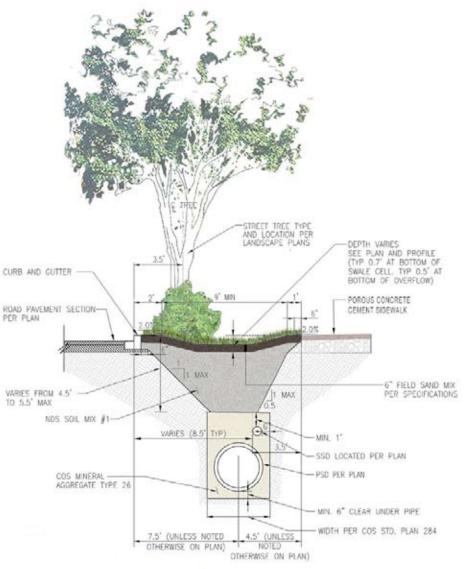
Typical Residential Street Section with 25' Roadway and 56' Right-of-Way



In this section, the 56' right of way still allows for ESD on one side of the roadway. Pervious concrete sidewalk slopes toward the swale.

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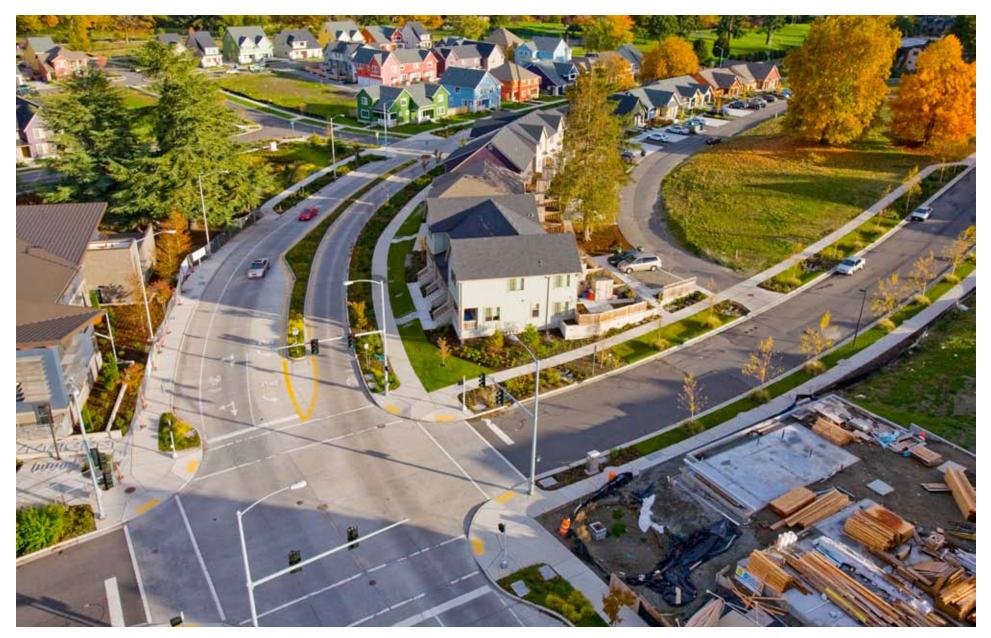




Details for two bioretention swale typologies. On the left is the deeper, vegetated swale with 10" surface parking. On the right is the shallower grass-lined swale with two inches of ponding. The facilities overflow into a piped system during larger storm events.

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RESIDENTIAL ARTERIAL GREEN STREET

A new arterial through mid-rise and ground-related residential housing uses ESD stormwater swales on both sides of the street while preserving existing trees.

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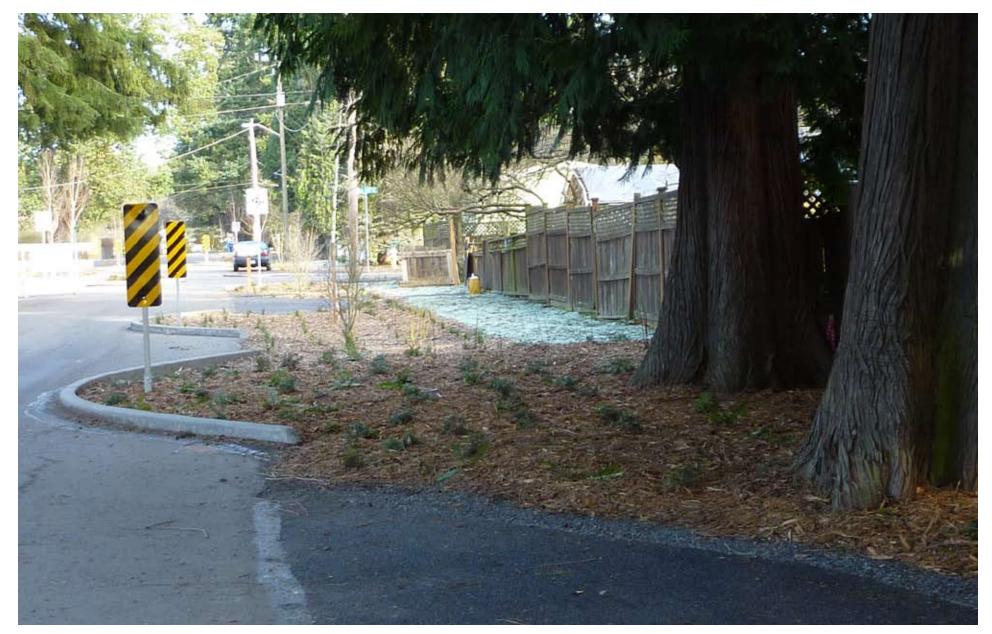




RESIDENTIAL RETROFIT

This residential retrofit did not have funding for full curb and gutter or to add a piped drainage system. Instead, small bioretention cells and a new porous asphalt pathway were added to manage stromwater and reduce the impervious area footprint. In the distance, the new path winds around an existing tree.

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RESIDENTIAL RETROFIT

The design used ESD measures such as porous asphalt and tree preservation (foreground) combined with bioinfiltration areas (background). In this image, the bioinfiltration areas were also used with a chicane to calm traffic.

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Proposed Plan

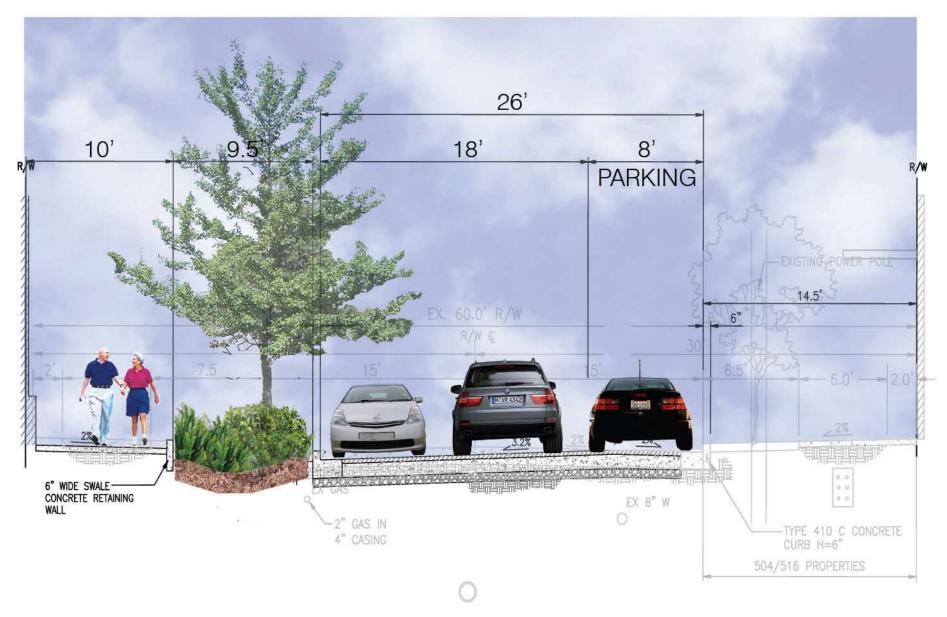


REDEVELOPMENT #1

This urban redevelopment of two parcels triggered the use of a variety of ESD strategies both on the private parcels and in the streetscape.

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Existing Conditions

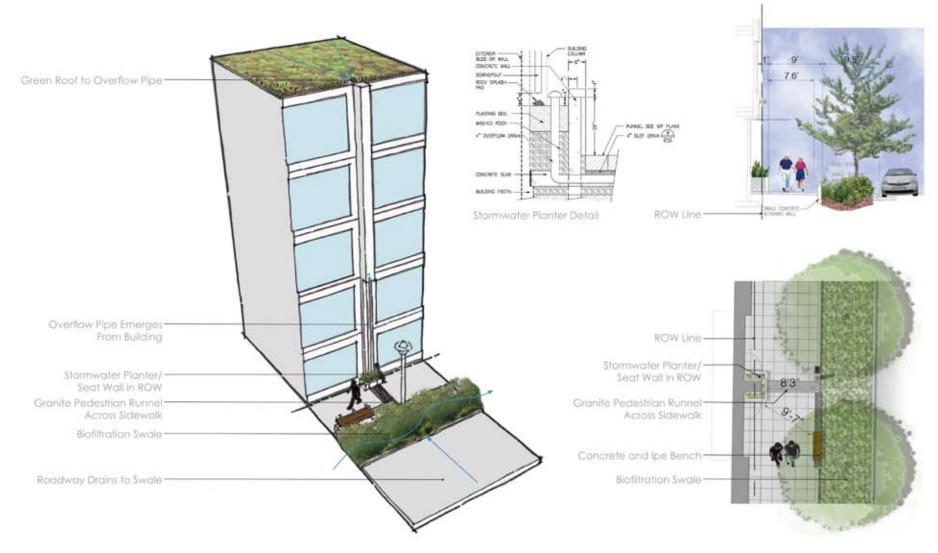




The reconfigured street proposes to throw the travel lanes to a bioretention swale. Parking is only on one side of the street

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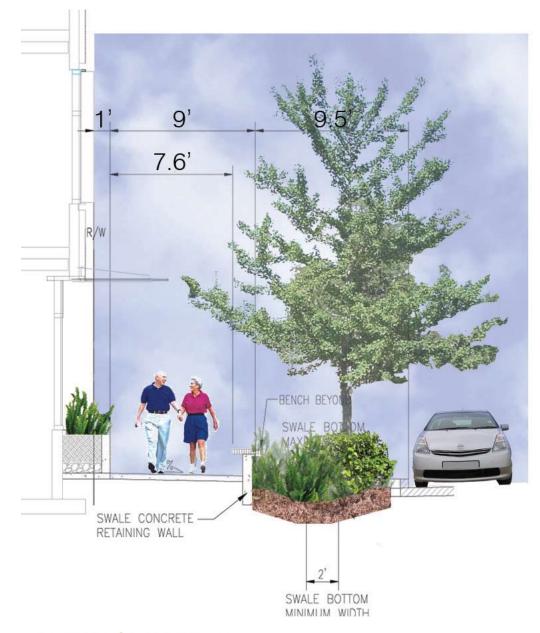
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The bioretention swale was just one of the ESD strategies used in this project to treat and attenuate stormater from both the public and private site.

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Careful detailing of the ESD/urban design features allow for a seamless integration of public and private investments to create a unique streetscape.

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At the north end of the site, a "woonerf" provides a continuous, unbroken plane of pavement from one edge of the right-of-way to the other--except when interrupted by the swale--and then into the building's outdoor atrium. This concept may be most applicable on a low volume street or alley.

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Private redevelopment can use stormwater requirements to showcase ESD techniques. These stormwater planters manage stormwater within the privately-owned, publicly-accessible open space. Water is mitigated on site before being slowly released to the public system.

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At this new municipal building a terraced set of gardens receive runoff from the roof and slowly release stormwater runnoff on this private parcel.

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This shopping mall parking lot was redeveloped to include ESD features like rain gardens as part of the stormwater strategy.

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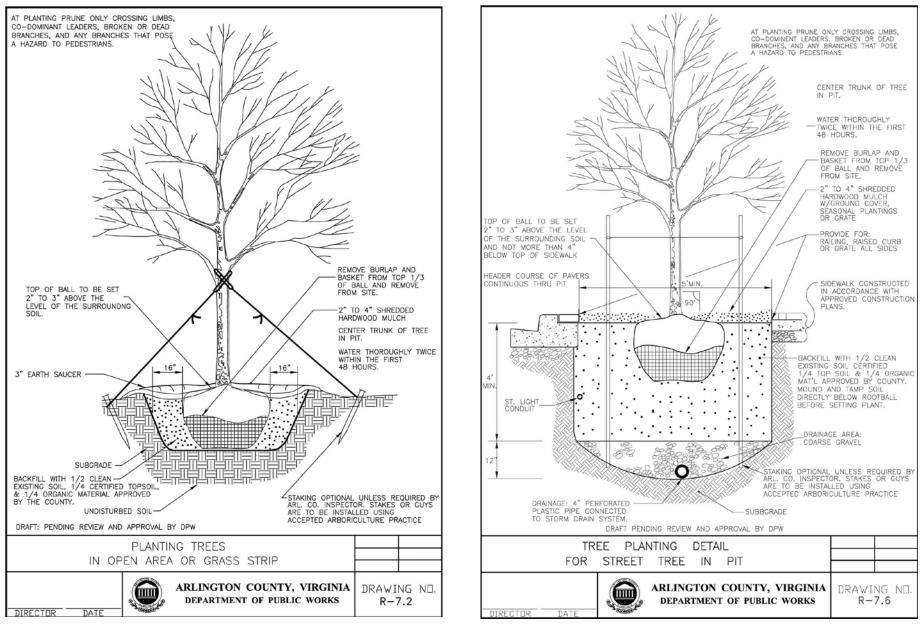
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The same shopping mall parking lot after several years of plant growth. Learn more about the municipal guidance for this project at: http://www.seattle.gov/dclu/publications/cam/CAM515.pdf

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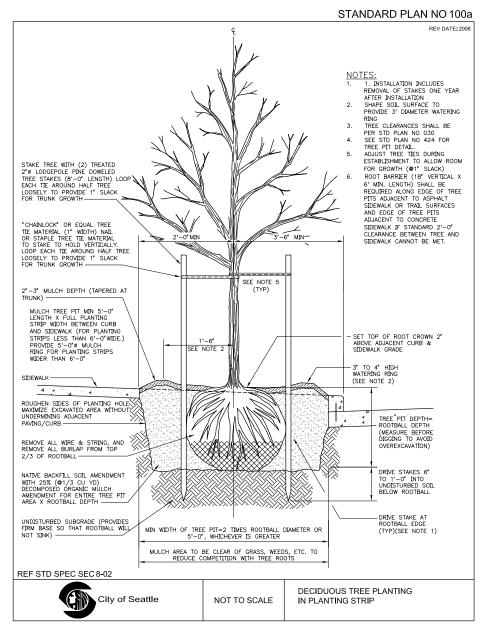




TREE DETAILS - ARLINGTON COUNTY, VA

Learn more at: http://www.arlingtonva.us/departments/cphd/planning/applications/site_plans/pdfs/ final_treeplanting_061303.pdf

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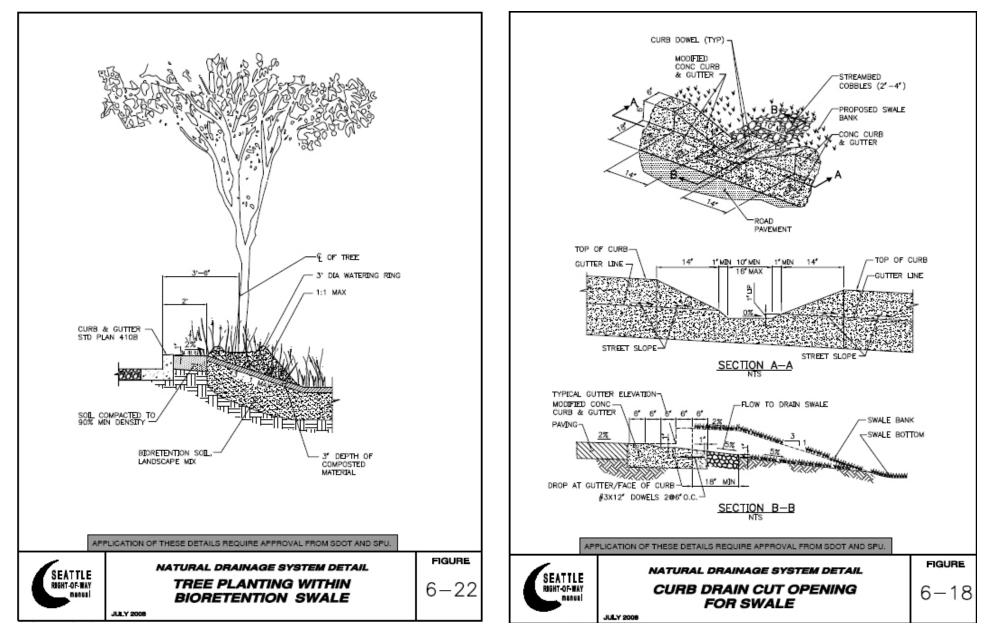




TREE DETAILS - SEATTLE, WA

Learn more at: http://www.seattle.gov/util/groups/public/@spu/@engineering/documents/ webcontent/01_011355.pdf

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TREE DETAILS - SEATTLE, WA

City of Seattle details for swales. Learn more at: http://www.seattle.gov/transportation/rowmanual/manual/pdf/Bioretention_Swalefigs615thru622%20.pdf

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Street Trees

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TREE GUIDANCE - SAN FRANCISCO, CA

San Francisco's Better Streets Plan tree planting guidance. For more information: http://www. sf-planning.org/ftp/BetterStreets/proposals.htm#Final_Plan



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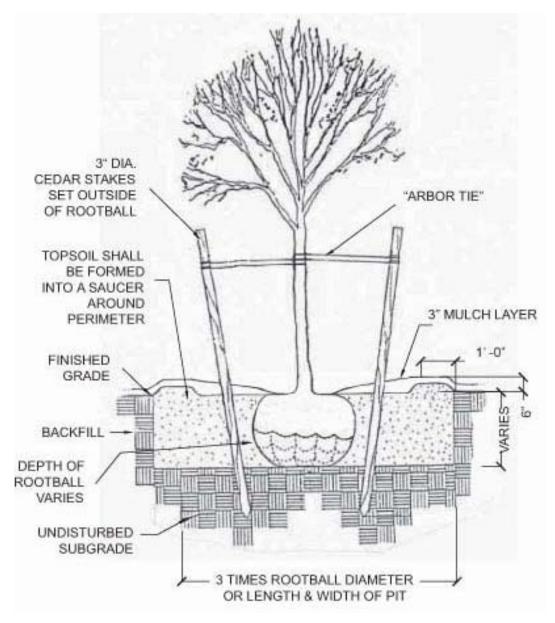
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TREE DETAILS - NEW YORK, NY

City of New York's standard tree planting detail. For more information: http://www.nycgovparks.org/ sub_permits_and_applications/images_and_pdfs/tree_planting_standards_2009.pdf

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